



[Docket No. EPA-HQ-OAR-2023-0216; FRL-10833-01-OAR]

Development of Guidance for Zero-Emission Clean Heavy-Duty Vehicles, Port Equipment, and Fueling Infrastructure Deployment under the Inflation Reduction Act Funding Programs

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice; request for information (RFI).

SUMMARY: To support development of potentially multiple funding programs under the Inflation Reduction Act of 2022, EPA invites public comment to inform the availability of zero-emission technologies in the heavy-duty vehicle and port sectors. Although EPA already has considerable information about the availability of certain types of these technologies, in order to ensure that EPA has the most comprehensive and current information available in this dynamic space, EPA is inviting this comment. EPA is especially interested in comments detailing the availability, market price, and performance of zero-emission trucks, zero-emission port equipment, electric charging and other fueling infrastructure needs for zero-emission technologies in the near term (1-3 years, and 1-5 years for port equipment), and whether the components of these systems are manufactured in the United States. The Build America Buy America Act (BABA) requires iron, steel, manufactured products, and construction materials used in infrastructure projects funded by federal financial assistance to be produced in the United States. While BABA provides the opportunity for EPA to issue certain waivers to these requirements, approval depends on many factors, including the price and availability of domestically sourced materials and products. With responses to this RFI EPA seeks to improve in particular the Agency's understanding of availability and differences in zero-emission class 6 and 7 trucks, zero-emission trucks that serve ports and port equipment as well as their related charging and fueling infrastructure requirements. This information will enable EPA to

effectively design programs to expeditiously fund currently available zero-emission technologies as well as consider allowances, such as longer project timeframes, for specific technologies.

DATES: Comments must be received on or before June 5, 2023, to allow for their consideration during development of these funding programs. EPA may consider comments received after the due date to the extent practicable.

ADDRESSES: You may submit your comments, identified by Docket ID No. EPA-HQ-OAR-2023-0216, by any of the following methods:

- *Federal eRulemaking Portal:* Go to <https://www.regulations.gov> and follow the online instructions for submitting comments;
- *Mail:* U.S. Environmental Protection Agency, EPA Docket Center, OAR Docket ID No. EPA-HQ-OAR-2023-0216, Mail Code 28221T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460;
- *Hand Delivery or Courier:* EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operation are 8:30 a.m.-4:30 p.m. EST., Monday through Friday, except Federal holidays.

Instructions: All submissions received must include the Docket ID No. EPA-HQ-OAR-2023-0216. Comments received may be posted without change to <https://www.regulations.gov>, including any personal information provided.

FOR FURTHER INFORMATION CONTACT: Dennis Johnson, Manager, Technology Assessment Branch, (202) 343-9278, or via email at johnson.dennis@epa.gov. U.S. EPA, Room: WJC-North 5512DD, Mail Code: 6406A, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Office hours are from 8 a.m. to 4:30 p.m. EST Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

In this RFI, the Agency provides a brief background on the Clean Heavy-Duty Vehicle and Clean Ports Programs under the IRA, background information on BABA provisions, and then

describes five areas of interest. The RFI then requests comments and responses to specific topics in each of these areas of interest. This RFI also includes guidance on submitting comments, procedures for submitting confidential business information as well as where to find additional information.

Responding to this RFI

Please indicate in your written comments the topic number(s) below you are commenting on and provide specific examples or information to illustrate your comments where possible. Please follow the instructions on <https://www.regulations.gov> and the docket website for submitting comments, but do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute as there are separate instructions below for submitting CBI. Once submitted, comments cannot be edited or removed from the docket. You do not need to address every topic and should focus on those where you have relevant expertise or experience. The EPA may publish any comment received to its public docket or to <https://www.regulations.gov> without change, including any personal information provided. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. In all cases, to the extent possible, please cite any public data related to or that support your responses. If data are available, but non-public, describe such data to the extent permissible. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system).

Confidential Business Information

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act

(FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this RFI contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this RFI, it is important that you clearly designate the submitted comments as CBI. Pursuant to 40 CFR Part 2, you may ask EPA to give confidential treatment to information you give to the Agency by taking the following steps: (1) Mark each page of the original document submission containing CBI as “Confidential”; (2) send EPA, along with the original document, a second copy of the original document with the CBI deleted; and (3) explain why the information you are submitting is CBI. Unless you are notified otherwise, EPA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this RFI. Submissions containing CBI should be sent to Dennis Johnson, Manager, Technology Assessment Branch, via email at johnson.dennis@epa.gov or to Dennis Johnson, U.S. EPA, Room: WJC North 5512DD, Mail Code: 6406A, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Any comment submissions that EPA receives that are not specifically designated as CBI will be placed in the public docket for this matter.

Background

In this section the Agency provides background information on two programs in the Inflation Reduction Act (IRA). The IRA enacted as Public Law 117–169 (August 16, 2022), includes important new programs to address climate change by reducing greenhouse gas emissions and to improve air quality through use of zero-emission vehicles and equipment. Among these programs is a (1) Clean Heavy-Duty Vehicles Program, and (2) Grants to Reduce Air Pollution at Ports Program. These programs provide funding that EPA will distribute to eligible recipients.

The Clean Heavy-Duty Vehicles (HDV) Program directs the Administrator to make awards of grants and rebates to eligible recipients and to make contracts to eligible contractors for

providing rebates (\$1 billion total). Eligible recipients include states, municipalities, Indian Tribes, or nonprofit school transportation associations. Eligible contractor means a contractor that has the capacity; (A) to sell, lease, license, or contract for service zero-emission vehicles, or charging or other equipment needed to charge, fuel, or maintain zero-emission vehicles, or to contract for service an eligible vehicle, or (B) to arrange financing for such a sale, lease, license, or contract for service. Funding can be for up to 100% of the costs for (1) the incremental costs of replacing an eligible class 6 or 7 heavy-duty vehicle with a zero-emission vehicle (2) purchasing, installing, operating and maintaining infrastructure needed to charge, fuel or maintain zero-emission vehicles; (3) workforce development and training to support the maintenance, charging, fueling and operation of zero-emission vehicles; and (4) planning and technical activities to support the adoption and deployment of zero-emission vehicles.

The Grants to Reduce Air Pollution at Ports Program (hereafter “Clean Ports Program”) provides the Administrator funding to award rebates and grants to eligible recipients on a competitive basis (\$3 billion total). Rebate and grant funding may be used: (A) to purchase or install zero-emission port equipment or technology for use at or to directly serve, one or more ports; (B) to conduct any relevant planning or permitting in connection with the purchase or installation of such zero-emission port equipment or technology; and (C) to develop qualified climate action plans. Eligible recipients include: (A) a port authority; (B) a state, regional, local or Tribal Agency that has jurisdiction over a port authority or a port; (C) an air pollution control agency; or (D) a private entity that (i) applies for a grant in partnership with an entity described in (A) through (C) and (ii) and owns, operates, or uses the facilities, cargo-handling equipment, transportation equipment or related technology of a port. Zero-emission port equipment or technology means a human-operated equipment or human-maintained technology that; (A) produces zero emissions of any air pollutant or any greenhouse gas other than water vapor; or (B) captures 100 percent of the emissions produced by an ocean-going vessel at berth.

Zero-emission vehicles and equipment are increasingly being offered for sale in the commercial truck and ports markets. Current options include vehicles powered by electricity and hydrogen. The Agency is aware of many of these product offerings. However, given the wide range of potential vehicles and equipment that could be considered for funding under the Clean HDV and Clean Ports Programs, EPA believes it is critical to provide an opportunity for all stakeholders (e.g., manufacturers, distributors, installers, fleet operators, port operators) to share information about their products and firsthand experience with zero-emission technologies if they so choose, in order to give EPA the broadest understanding possible of potential vehicles and equipment eligible to fund.

Charging and Fueling Infrastructure: Through the Clean HDV and Clean Ports programs, EPA may fund charging and other fueling infrastructure as an eligible expense in supporting zero-emission heavy-duty vehicle and port equipment projects. To this end, the Agency seeks information on the manufacturing and assembly of electric charging and other fueling infrastructure for zero-emission commercial vehicles and port equipment, such as whether zero-emissions fueling infrastructure manufactured in the United States can comply with applicable BABA requirements. This RFI is intended to: (A) help EPA better understand whether and to what extent domestic sourcing is available now, or may be possible in the near future, for electric charging and other fueling equipment and components; (B) ensure domestic manufacturers have the opportunity to identify any electric vehicle (EV) charger and fueling equipment meeting applicable BABA requirements; (C) ensure domestic manufacturers have the opportunity to identify any electric charging and other fueling equipment that could meet a domestic final assembly condition, and identify the portion of components that could meet a domestic manufacturing requirements; and (D) highlight benefits of shifting manufacturing processes to the United States.

Through this RFI, EPA seeks information regarding the availability of zero-emission heavy-duty vehicle and port equipment, electric chargers and fueling equipment, such as for hydrogen, that is manufactured and/or assembled in the United States, including whether they comply with applicable BABA requirements. EPA is not aware of any zero-emission heavy-duty vehicle or port equipment electric chargers or fueling equipment that currently meets applicable BABA requirements for steel and iron or manufactured products. The Agency is interested in promptly obtaining more information on this issue and others discussed in this notice to assess if sufficient quantities of equipment are currently available to comply with BABA requirements or whether sufficient equipment would be available in the near future.

Build America Buy America Act

In January 2021, the President issued Executive Order (E.O.) 14005, titled “Ensuring the Future is Made in All of America by All of America’s Workers.” 86 FR 7475 (Jan. 28, 2021). E.O. 14005 states that the United States Government “should, consistent with applicable law, use terms and conditions of Federal financial assistance awards and Federal procurements to maximize the use of goods, products, and materials produced in, and services offered in, the United States.” The EPA is committed to ensuring strong and effective Buy America implementation consistent with E.O. 14005. At the same time, the EPA must also consider how to ensure that electric chargers and fueling equipment, such as for hydrogen, are widely available in the immediate future to implement EPA-funded projects throughout the United States and its territories in a timely and cost-effective manner.

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (“IIJA”), Pub. L. No. 117-58, which includes the Build America, Buy America (BABA) Act. Pub. L. No. 117-58, sections 70901-52. The Act strengthens Made in America Laws and will

bolster America’s industrial base, protect national security, and support high-paying jobs. The Act requires that the head of each covered Federal agency ensure that “none of the funds made available for a Federal financial assistance program for infrastructure, including each deficient program, may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States” (Build America, Buy America (BABA) Act, Pub. L. 117-58, Sections 70911 – 70917), unless a waiver is granted.¹ . This means that the manufactured product was manufactured in the United States, and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation. IIJA section 70912(6)(B). For all steel or iron materials used in infrastructure projects that involve the obligation of federal financial assistance, manufacturing processes, including application of a coating, must occur in the United States. Coating includes all processes which protect or enhance the value of the material to which the coating is applied. Such projects involve both the acquisition and installation of such equipment. These requirements apply to the obligation of all federal financial assistance for infrastructure projects, including IRA funds. EPA is committed to ensuring strong and effective Buy America implementation consistent with E.O. 14005. In implementing the IRA Clean HDV and Ports Programs, EPA will ensure compliance with BABA requirements.

Request for Comments and Information

¹ OMB M-22-11, <https://www.whitehouse.gov/wp-content/uploads/2022/04/M-22-11.pdf>

In this section, the Agency describes general areas of interest to be addressed in these topics. To inform development of the Clean HDV and Clean Ports Programs, EPA requests comments and information from the public on the following five areas of interest:

- A. **Technology Availability and Market-Readiness:** EPA recognizes that some zero-emission heavy-duty trucks are currently being marketed for sale. Consequently, EPA requests current and expected near term (within 1, 2, and 3 years) availability of potentially eligible zero-emission class 6 (gross vehicle weight rating 19,501-26,000 pounds) and class 7 (GVWR 26,001 – 33,000 pounds) vehicles, such as refuse haulers, day cab tractors, cargo vans, school buses, and straight trucks. Additionally, EPA is seeking responses to these same questions with respect to commercial trucks that may be used at ports, such as zero-emission service trucks and class 7 and 8 (GVWR > 33,000 pounds) dray trucks. EPA requests responses to the questions regarding the current state of zero-emission port equipment and related fuel infrastructure availability, including commercial readiness and production volumes, for near-term as current capabilities, as well as in the 1-, 2-, 3- and 5-year timeframes.
- B. **Performance:** EPA requests information regarding current and expected near-term characteristics of zero-emissions heavy-duty vehicles (1 to 3 years) and port equipment (1 to 5 years) and related fueling with regards to performance, reliability, and durability, including standard and optional warranty information, and descriptions of performance comparing the zero-emission truck or equipment to those operating on conventional petroleum-based liquid fuels.
- C. **Pricing:** EPA requests information regarding current and expected near-term market prices of zero-emission heavy-duty vehicles (1 to 3 years), port equipment (1 to 5 years) and related fueling infrastructure, as well as the incremental costs relative to those operating on conventional petroleum-based liquid fuels.

D. Domestic Materials Sourcing and Manufacturing: EPA requests information regarding the extent to which materials are sourced from the U.S. and if manufacturing occurs in the U.S. to comply with BABA requirements currently, or in the near-term, especially with respect to electric charging and other fueling equipment.

E. Other Practical Considerations: EPA requests information that can inform implementation of zero-emission heavy-duty vehicle, port equipment, and related charging/fueling infrastructure projects. Please provide information such as necessary training, maintenance facility modifications, required safety equipment and the availability of hydrogen from different sources that produce zero-emissions.

Topics for Areas of Interest

In this section, the Agency requests responses to specific topics. Please indicate in your written comments the topic number(s) you are commenting on and provide specific examples or information to illustrate your comments where possible.

Topics

A. Technology Availability and Market-Readiness

1. Using the following categories as a guide, please identify specific types of vehicles or equipment that you are providing information about in response to this RFI. For each item you identify, please provide a description, and specify the type of powertrain (e.g., electric [non-battery], battery-electric, hydrogen fuel cell electric, or other zero-emissions technologies).
 - a. **Zero-emissions class 6 and 7 vehicles:** including but not limited to school buses, refuse trucks, utility trucks, box trucks, cargo vans, and day cab tractors.
 - b. **Zero-emission port equipment:** including but not limited to port dray trucks, cargo handling equipment, yard tractors, locomotives, railcar movers, harbor craft, shore power,

and technologies to capture 100 percent of emissions produced by an ocean-going vessel at berth.

- c. **Zero-emissions fueling infrastructure:** including but not limited to heavy-duty electric vehicle, equipment, and locomotive chargers, as well as hydrogen refueling infrastructure.

2. For each of the items you identified in response to Topic 1, please:

- a. Describe the current and the expected availability of the equipment based on sales volumes, number and size of manufacturers, and other key industry factors.
- b. Provide information on the near-term demand outlook for this equipment. For entities that are eligible for funding, please describe how many and what types of zero-emission heavy-duty vehicles and port technologies you anticipate purchasing in the near-term.
- c. Provide information regarding whether the current and expected near-term manufacturing capacity would be adequate to meet the expected market demand, including anticipated federal funding. Please specify any factors helping or preventing the industry from meeting the expected demand today and in the near-term and provide information on the availability of and materials used in key components such as batteries, electric motors, high-voltage cables, storage tanks, pumps, hoses, nozzles, enclosures, and required safety equipment.
- d. Provide information on whether various duty cycles affect available power levels at the installation site and dwell times needed for charging, whether charging is anticipated to happen on site or en route, and how expected needs for zero-emission heavy-duty vehicles and zero-emission port equipment might differ from what is commercially available today and in the near-term timeframes.
- e. Please indicate to what extent it is human-operated equipment and/or a human-maintained technology.

- f. Provide information on the current and expected near-term average customer delivery time.
3. For each of the items you identified in response to Topic 1.c., please describe the current and expected availability or unavailability of components, such as, electrical plugs, transformers, electrical switchgear, hydrogen storage tanks, pumps, hoses, nozzles, enclosures, and required safety equipment.
 4. For each of the *battery-electric* and *charger* items you identified in response to Topic 1, please describe the standard and optional equipment specifications. Please specify the type of charging included, e.g. whether it uses the SAE J1772 connector for AC charging (also known as the Jplug), if it provides DC Fast Charging, if it uses the Combine Charging System (CCS) connector, if it uses the CHAdeMO connector, if it uses the Megawatt Charging System (MCS), and or whether it uses an additional connector technology and what type, whether it uses inductive charging, and other relevant information such as maximum power rating (kW) and standards to which the equipment is certified.
 5. For each of the *battery-electric* items you identified in response to Topic 1, please describe whether and how the batteries can be upgraded or replaced.

B. Performance

6. For each item you identified in response to Topic 1, please:
 - a. Describe the expected service life and long-term operation and maintenance requirements relative to those operating on conventional petroleum-based liquid fuels.
 - b. Describe charging or fueling requirements. Potential items to consider include:
 - connections to the electric grid, including electric distribution upgrades; vehicle-to-grid integration, including smart charge management, bi-directional charging or other protocols that can minimize impacts to the grid, alignment with electric distribution interconnection processes; potentially unique charging systems (such as for vessels or

locomotives), multi-use charging stations to charge different types of equipment, potential to charge multiple systems concurrently; on-site energy storage; and potential use of renewable energy sources to power charging, energy storage and/or hydrogen production.

- c. Describe the original manufacturer's warranty. Please include all applicable parameters, such as years, hours or miles of operation, and number of charging cycles and as well as whether the warranty covers the damage from any potential charger malfunction.
 - d. Describe differences in performance and operational characteristics between the zero-emission HDV or port equipment and the comparable conventionally fueled counterpart. Please fully explain all differences in capacity, speed, operating range, impacts on operation due to ambient conditions or limitations in capabilities.
7. For each of the *battery-electric* items you identified in response to Topic 1, please:
- a. Identify all charger manufacturers or charger models with which this item has been verified to have full technology compatibility or other EV charging standards and how compliance was demonstrated. Please provide information on how the technology compatibility was verified.
 - b. Please describe what type of safety mechanisms are used to protect battery packs from water intrusion, corrosion due to flooding and salt, thermal runaway events, and/or other hazards.

C. Pricing

8. For each of the items you identified in response to Topic 1, please:
- a. Specify the current market price (or price range) and what is included in that price. For example, in the case of chargers, please specify whether it is for a complete charger pedestal, power equipment and associated electrical system capable of charging one or

more vehicles. Please also specify if additional costs for installation and commissioning are included.

- b. Provide information on the price outlook through calendar year, and, where applicable, through the near-term future. Please identify and describe any opportunities for reducing prices.
 - c. Please also discuss the incremental and lifecycle costs as well as the payback period relative to similar equipment or vehicles operating on conventional petroleum-based liquid fuels. In addition to the total cost, where possible, please provide cost information itemized by category (for example: purchase of vehicles or equipment, installation, maintenance, fuel/charging, insurance, other operating expenses) and include the key assumptions used to estimate them.
 - d. Please identify and describe any opportunities for reducing prices of zero-emission technologies.
 - e. Provide information regarding global supply chain constraints, local permitting, safety requirements and needs that may increase costs, impact delivery timeframes, or extend installation time.
9. EPA is interested in better understanding the current lifetime costs/Total Cost of Ownership (TCO) gap between electric and diesel school buses as well as how that gap is expected to change over time. For each of the TCO cost categories (a-c) listed here, please provide cost estimates using the following parameters: a period of analysis of 10 years; a fleet size of 50 buses; and a 5-year straight line depreciation schedule (please clearly state what alternative assumptions have been made). Also, please clearly state what assumptions have been made on geographic region of analysis and / or specific districts; average vehicle life expectancy; sales tax; and annual days of operation. To the extent other HD vehicle types, such as dray

trucks, can address the TCO in this fashion, please provide a similar description for those vehicle types.

- a. Capital cost (CAPEX) categories: Vehicle, charging/fueling infrastructure, residual value
- b. Operating cost (OPEX) categories; Operating expense, fuel/electricity, insurance, registration
- c. Other (please specify)

D. Domestic Materials Sourcing and Manufacturing

10. For each of the applicable items you identified in response to Topic 1, please specify whether the product meets BABA requirements or is currently manufactured in the United States to meet a domestic final assembly condition. (Yes or No)

11. If you answered “Yes” to Topic 10:

- a. Please identify all manufacturers that can either meet BABA requirements or can currently manufacture equipment in the United States.. For those that meet the condition of manufactured in the United States, but do not meet the domestic content requirement, please identify the percentage of components manufactured in the United States as calculated by cost of components (if known).
- b. How many of each equipment type meeting BABA requirements or manufactured in the United States conditions can be manufactured per year during the next 5 years?
- c. What portion of the total market supply for each equipment type do you estimate to be BABA compliant?
- d. What is the typical cost for the steel and iron used in this equipment type?
- e. What percent of the total cost is typically represented by the steel and iron used to manufacture this equipment type? If you cannot provide the percent, please describe if it is more or less than 50% of the total cost.

- f. Can the origins of the steel and iron used in this equipment type be certified by documentation? If so, how?

12. If you answered “No” to Topic 10:

- a. What steps can manufacturers take to increase equipment that meets BABA requirements?
- b. What additional support is needed ensure a sufficient supply of equipment that meets BABA requirements?
- c. How long might it take to undertake those steps?
- d. What is the volume of equipment that could be shifted to manufacture in compliance with BABA requirements?
- e. Can that volume be ramped up over time, and if so at what annual growth rate?

13. For available zero-emission technologies, please describe any differences between domestically manufactured or assembled and non-domestic equipment. Please address any differences in supply availability, price, replacement part delivery, functionality, security, etc.

E. Other Practical Considerations for Program Design

14. For each of the items you identified in response to Topic 1, please provide examples of best practices relating to project development, installation, and adoption of zero-emissions equipment and related electric, hydrogen, or other fueling infrastructure you identified in response to Topic 1.

15. For each of the *fueling infrastructure* types you identified in response to Question 1, please provide examples of the phases and time required for planning, permitting, sourcing, delivering, and installing this equipment.

16. Please identify any unique factors for states, municipalities, utilities, ports authorities, Indian Tribes, or nonattainment areas to consider in developing zero-emission projects including necessary charging or other fueling infrastructure.
17. If known, please describe opportunities and best practices to:
- a. Maximize environmental benefits such as replacing the oldest, highest use, highest emitting equipment with available zero emission technologies.
 - b. Maximize benefits with technologies to service one or more ports and intermodal facilities to potentially share or coordinate charging/fueling infrastructure.
 - c. Leverage or improve zero-emission transport corridors.
 - d. Maximize benefits for workforce development and jobs training outcomes.
 - e. Maximize benefits for disadvantaged communities and/or advancing other environmental justice objectives.
18. Please describe what specialized workforce expertise, including key occupations, is needed to support the installation, use, and maintenance of (1) clean heavy-duty vehicles, and (2) zero-emission port equipment. What (if any) challenges do you anticipate in meeting your expertise and capacity needs? How can these challenges be effectively addressed?

May 3, 2023.

Sarah Dunham,

Director,

Office of Transportation and Air Quality.